

RVSB Transmitter (initial concept)

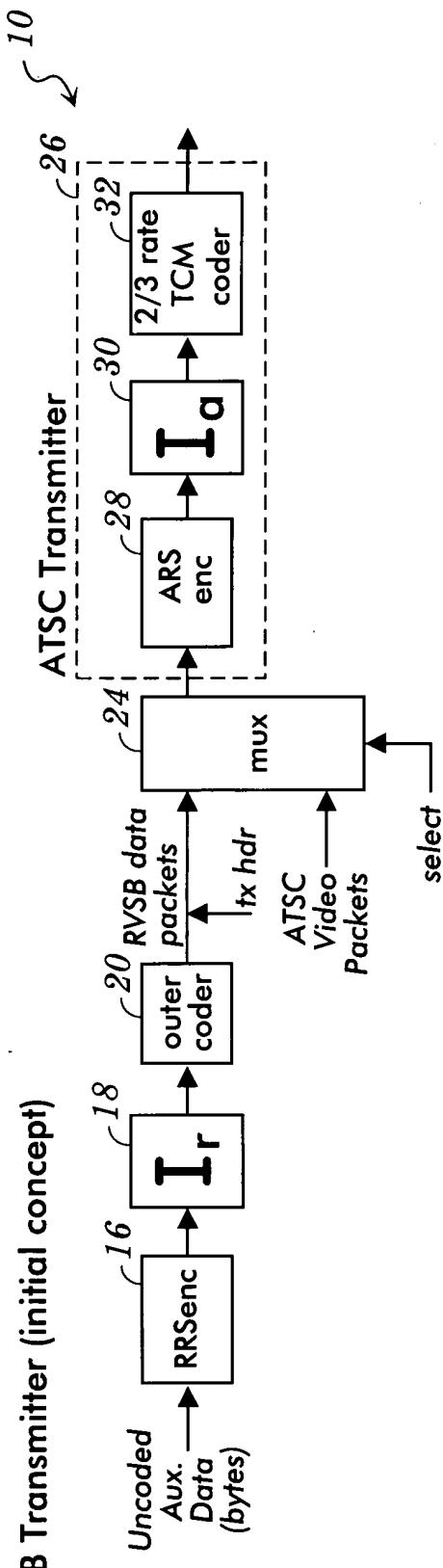


Figure 1

mapper function			
Z2	Z1	Z0	level
0	0	0	-7
0	0	1	-5
0	1	0	-3
0	1	1	-1
1	0	0	+1
1	0	1	+3
1	1	0	+5
1	1	1	+7

Figure 5

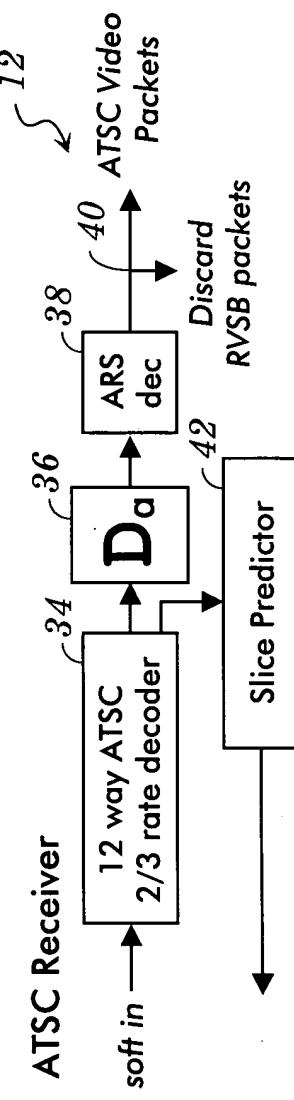


Figure 2

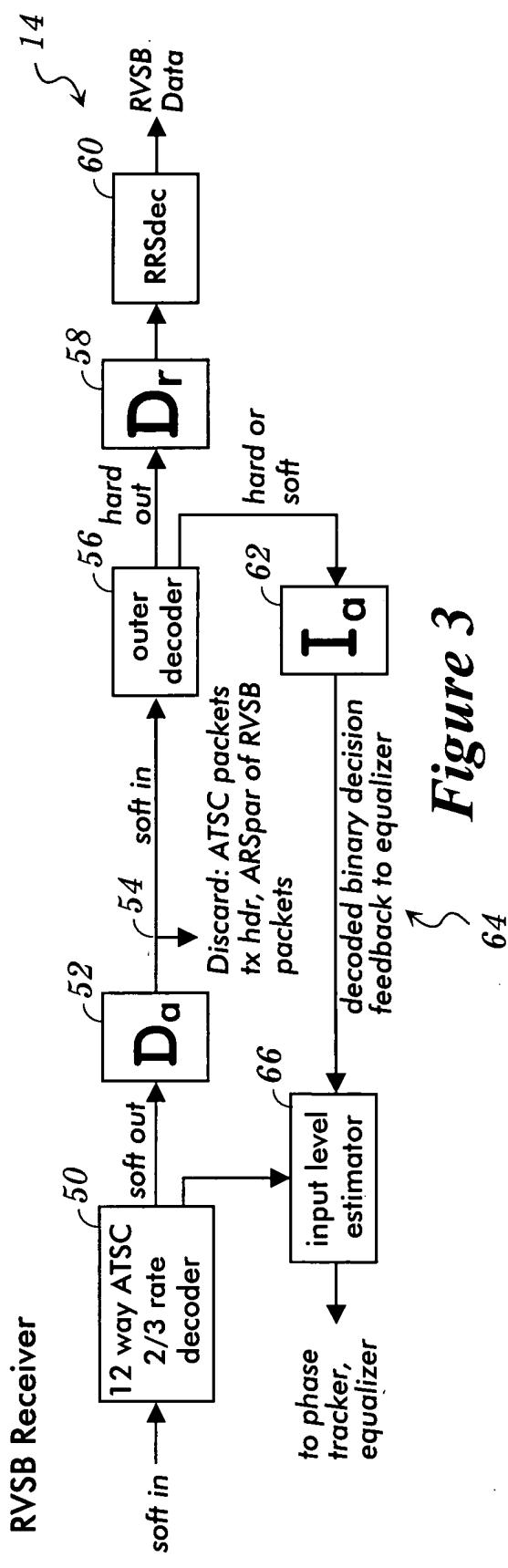


Figure 3

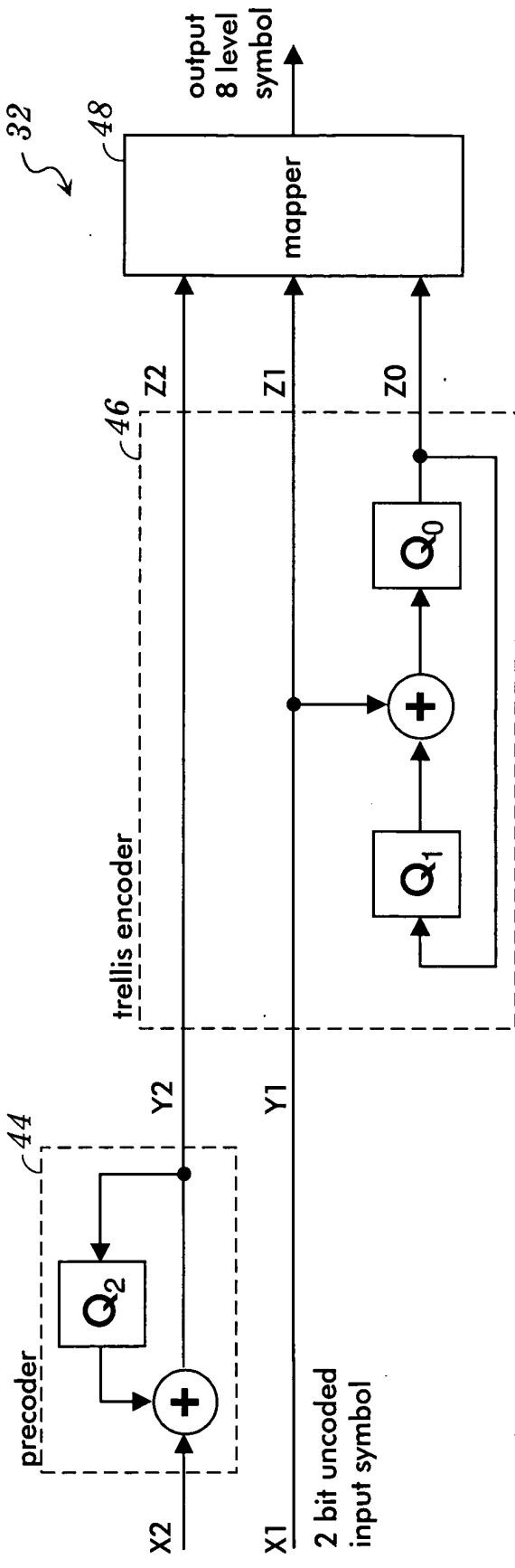
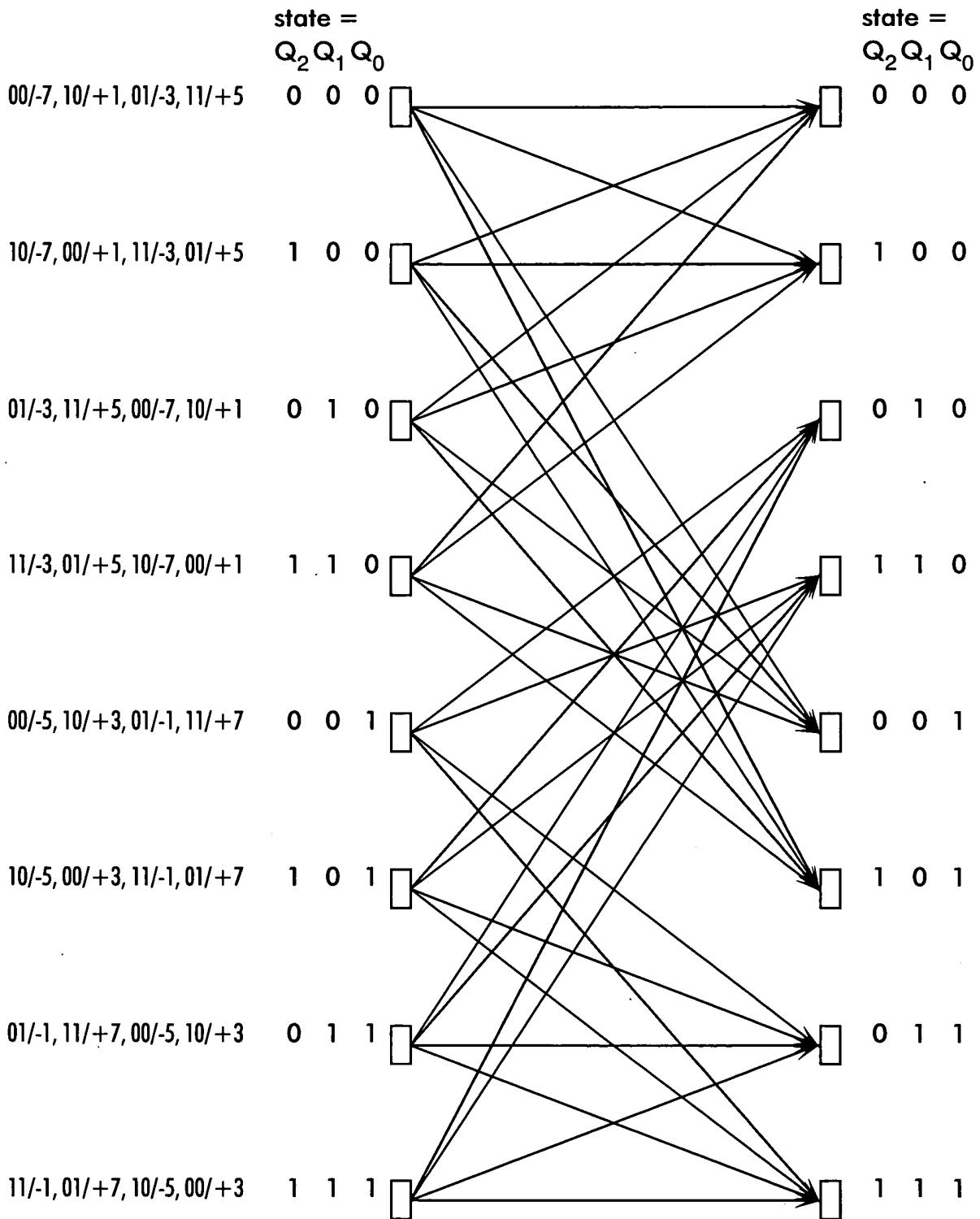


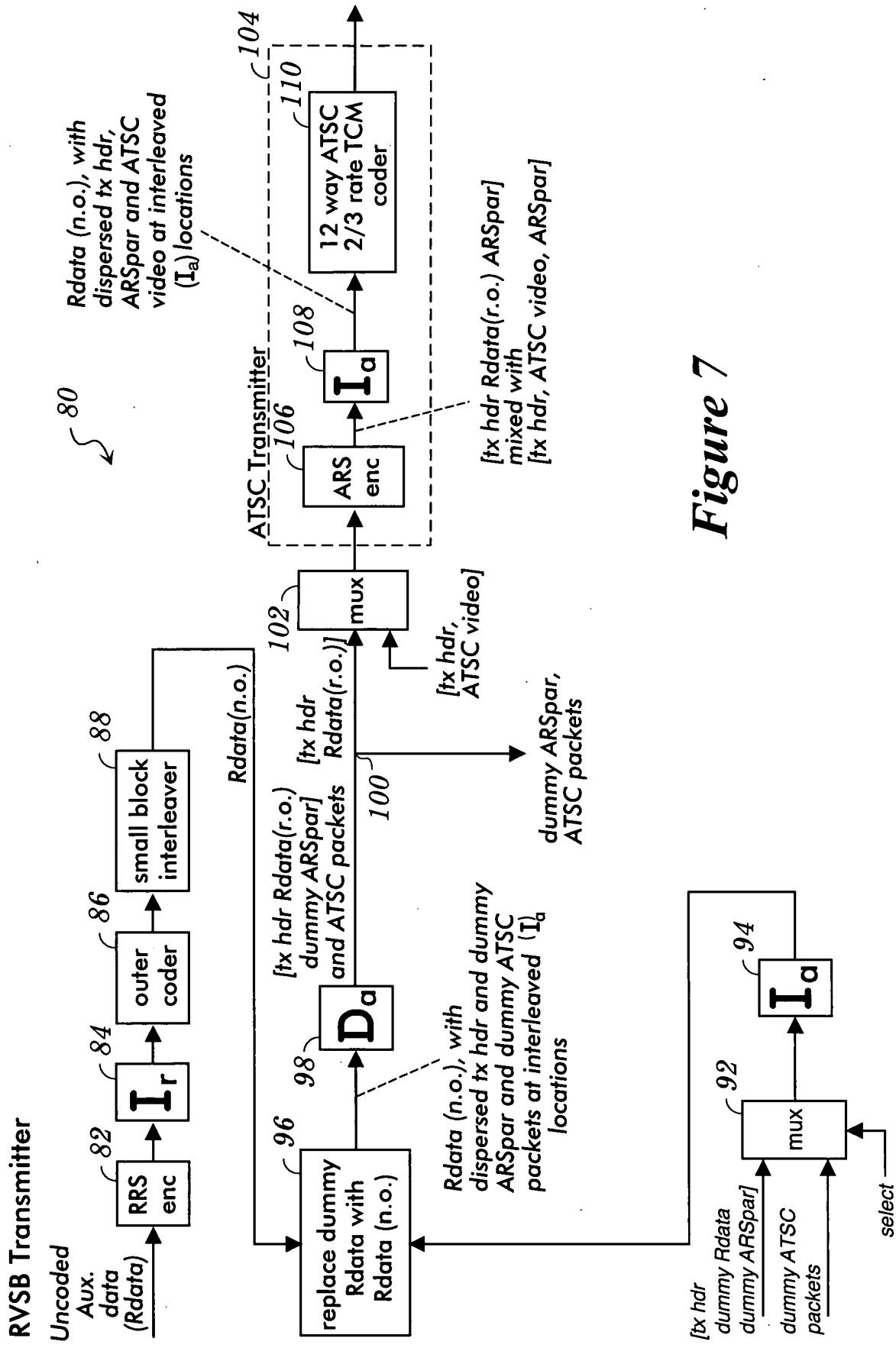
Figure 4

branch label :

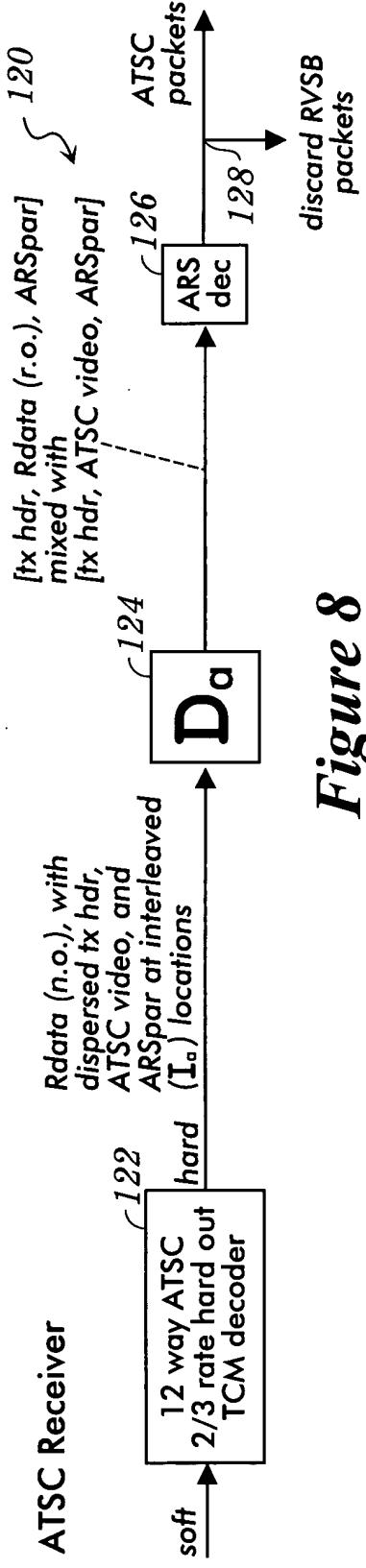
$X_2X_1$  / mapped output level



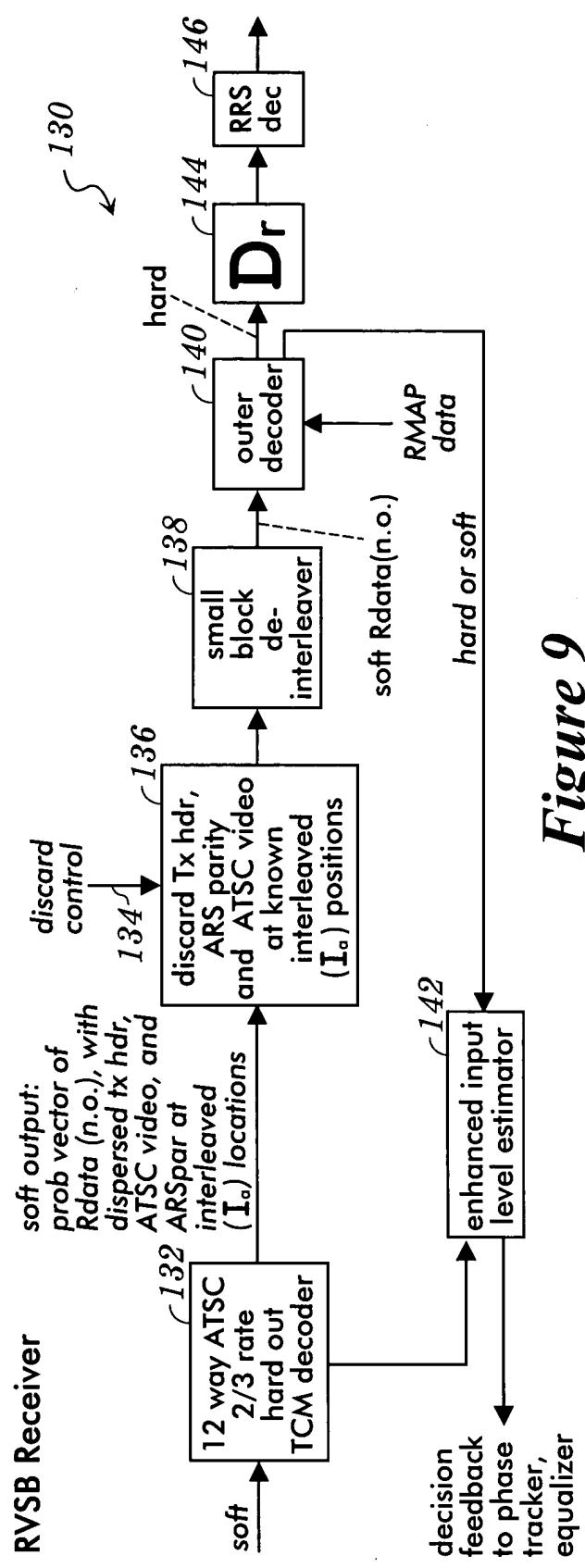
*Figure 6*



**Figure 7**



**Figure 8**



**Figure 9**

## RVSB Receiver

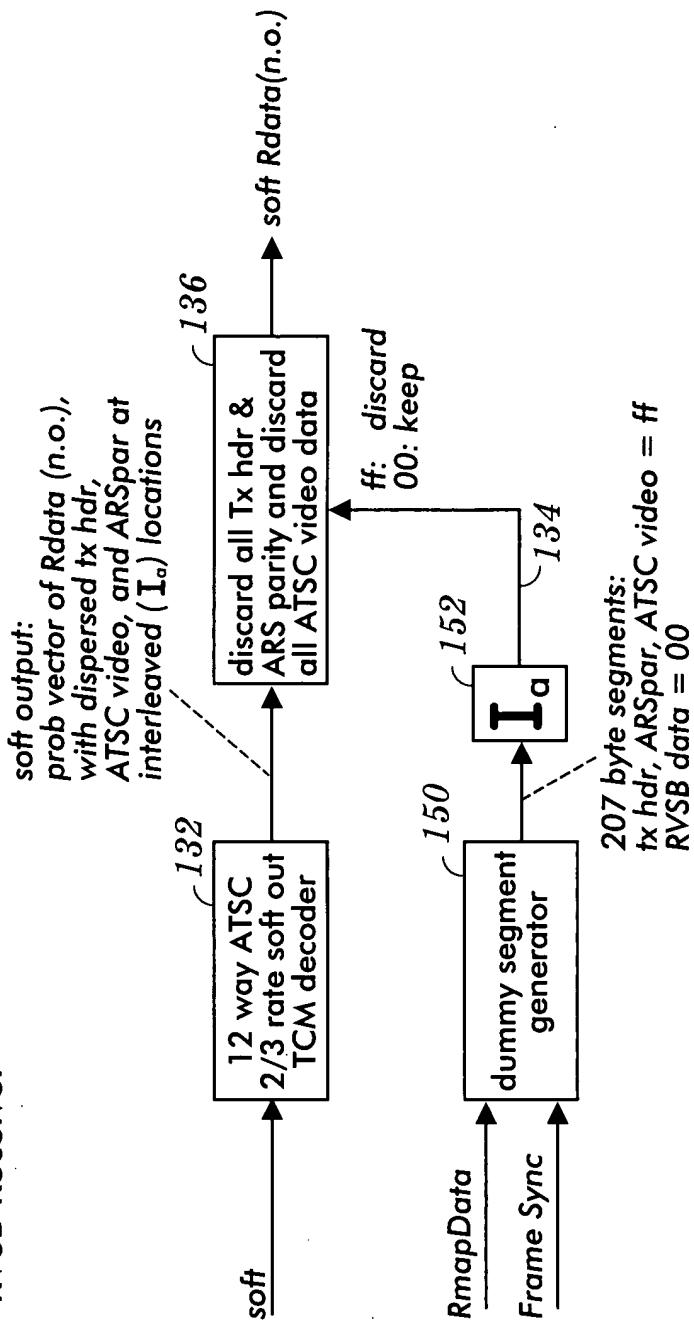
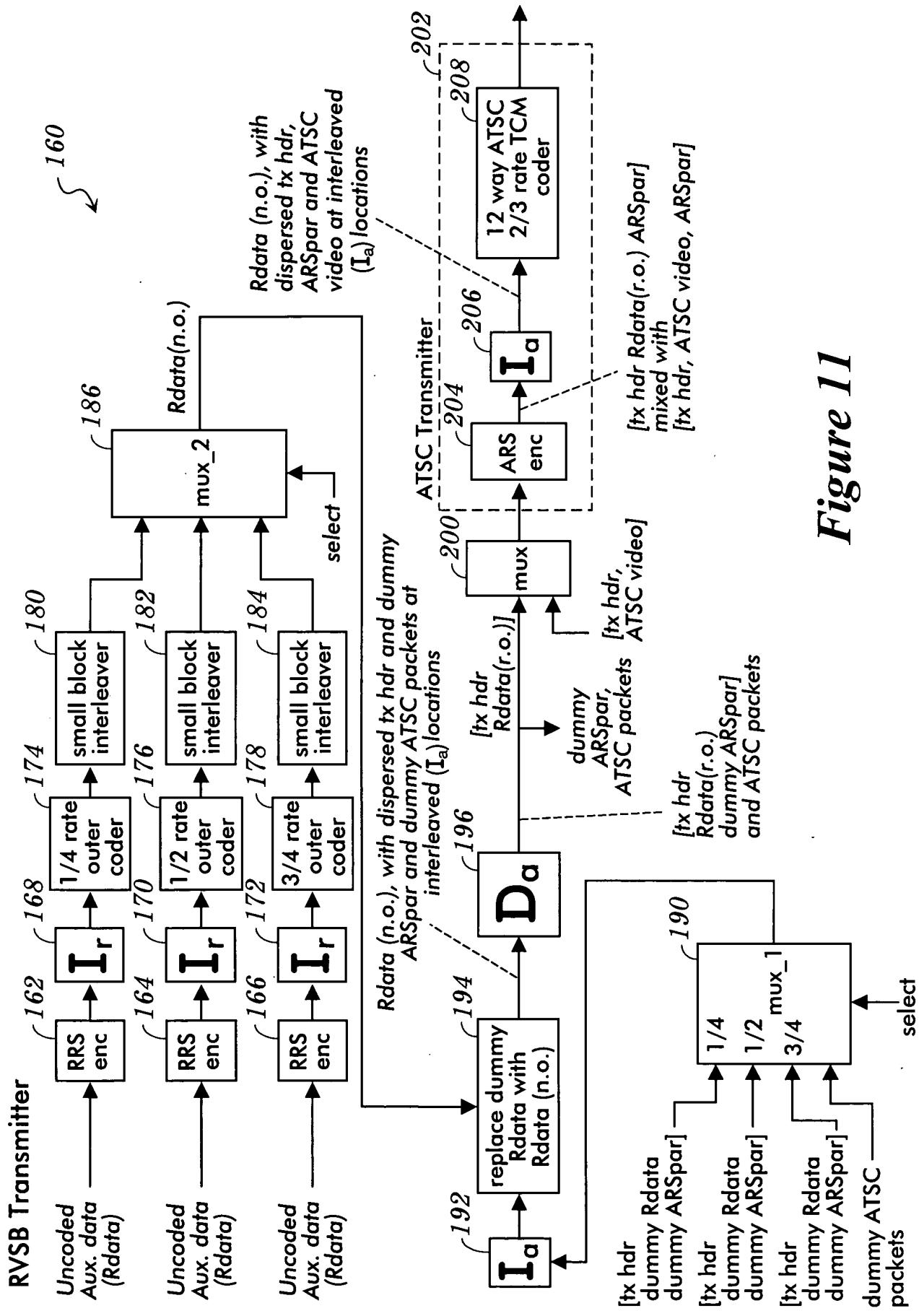


Figure 10



*Figure 11*

for 1/2 rate outer code

ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 92 bytes payload		ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (576 symbols) 72 bytes payload	RRS parity (160 symbols) 20 bytes	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 92 bytes payload		ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (576 symbols) 72 bytes payload		ARS parity (80 symbols)
2 bits/symbol	1 bit/symbol		2 bits/symbol

*Figure 12*

for 1/4 rate outer code

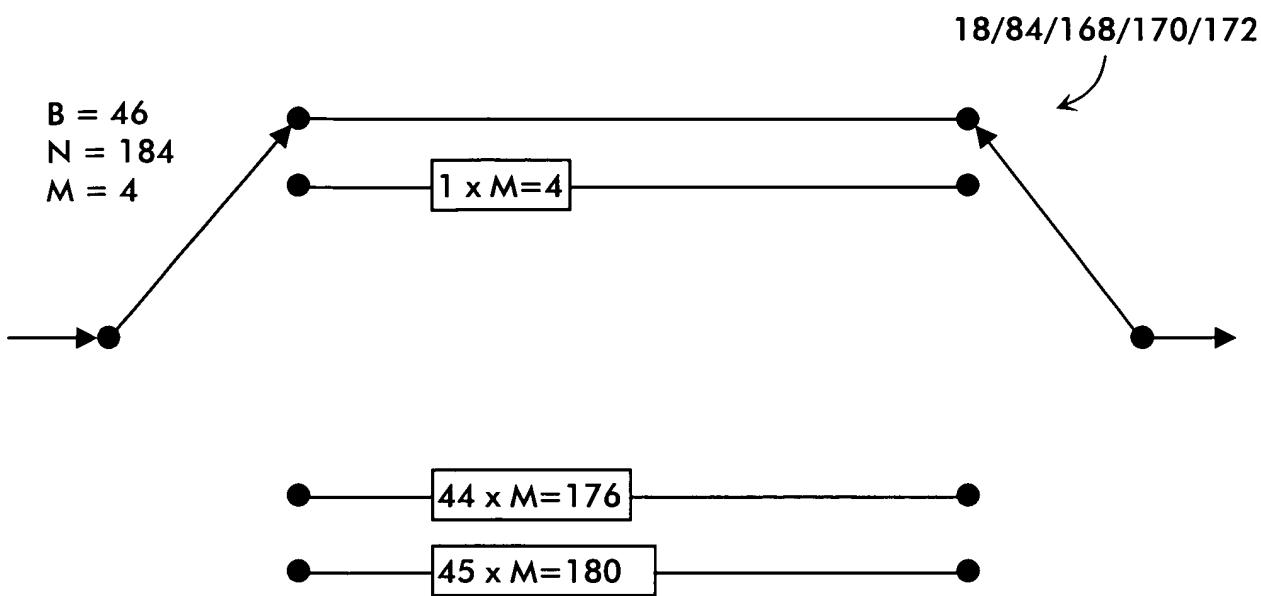
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 46 bytes payload	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 46 bytes payload	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 46 bytes payload	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (416 symbols) 26 bytes payload	RRS parity (320 symbols) 20 bytes
2 bits/symbol	0.5 bit/symbol	2 bits/symbol

*Figure 13*

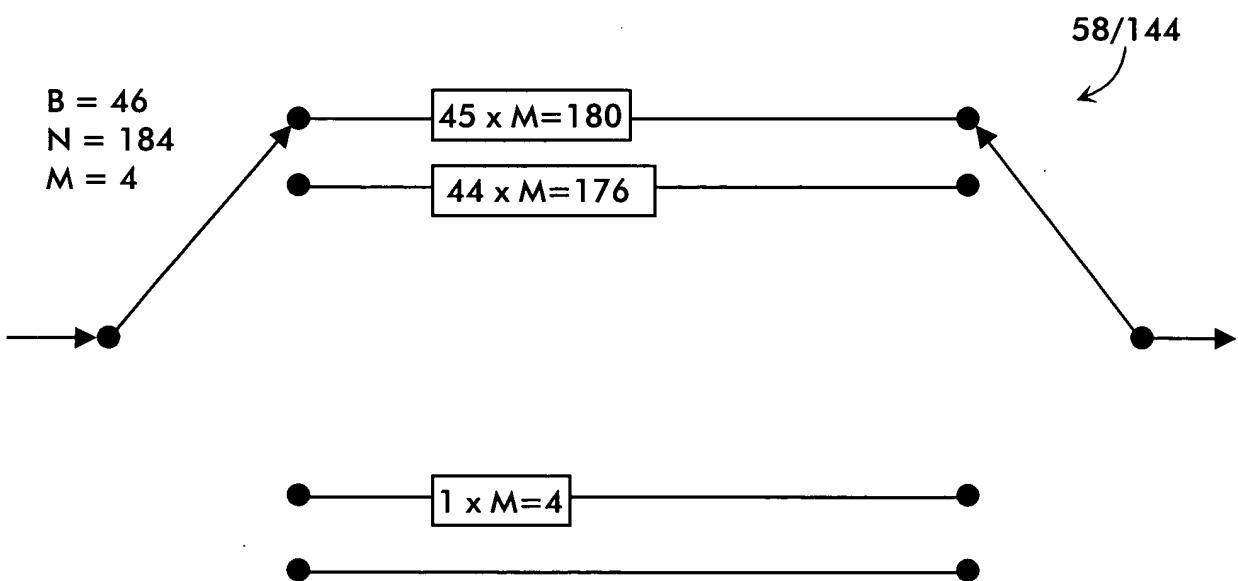
for 3/4 rate outer code

ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 138 bytes payload	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 26 bytes payload   20 bytes RRS parity   92 bytes payload	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 72 bytes payload   20 bytes RRS parity   46 bytes payload	ARS parity (80 symbols)
ATSC tx hdr (12 symbols)	RVSB data (736 symbols) 118 bytes payload   20 bytes RRS parity	ARS parity (80 symbols)
2 bits/symbol	1.5 bit/symbol	2 bits/symbol

*Figure 14*



*Figure 15*

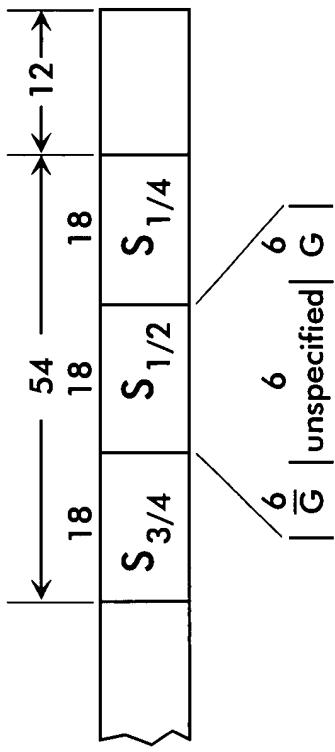


*Figure 16*

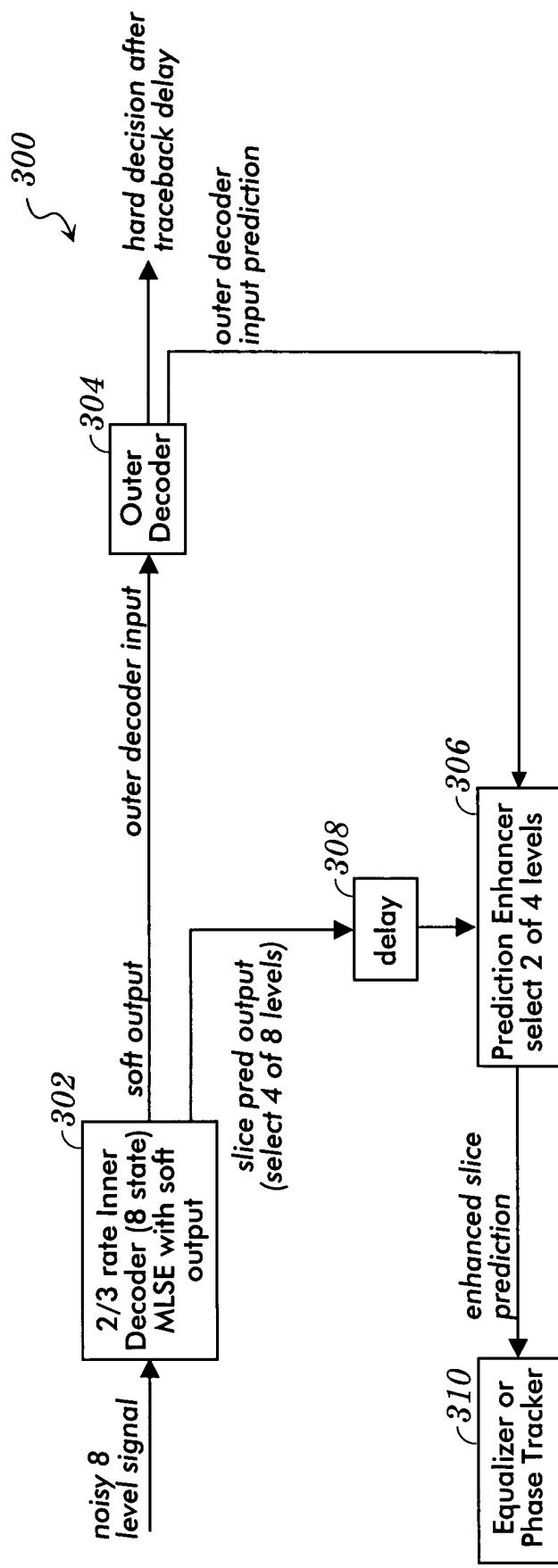
First RVSB RS block of field



*Figure 17*



**Figure 18**



**Figure 19**

branch labeling:  
decoder input level / decoder output

state 1 → -7 / 00

+1 / 10

5 → -3 / 01

2 → +5 / 11

6 →

branch labeling:  
decoder input bit pair / decoder output bit

state 1 → 11 / 1

01 / 0

Figure 20

Figure 21

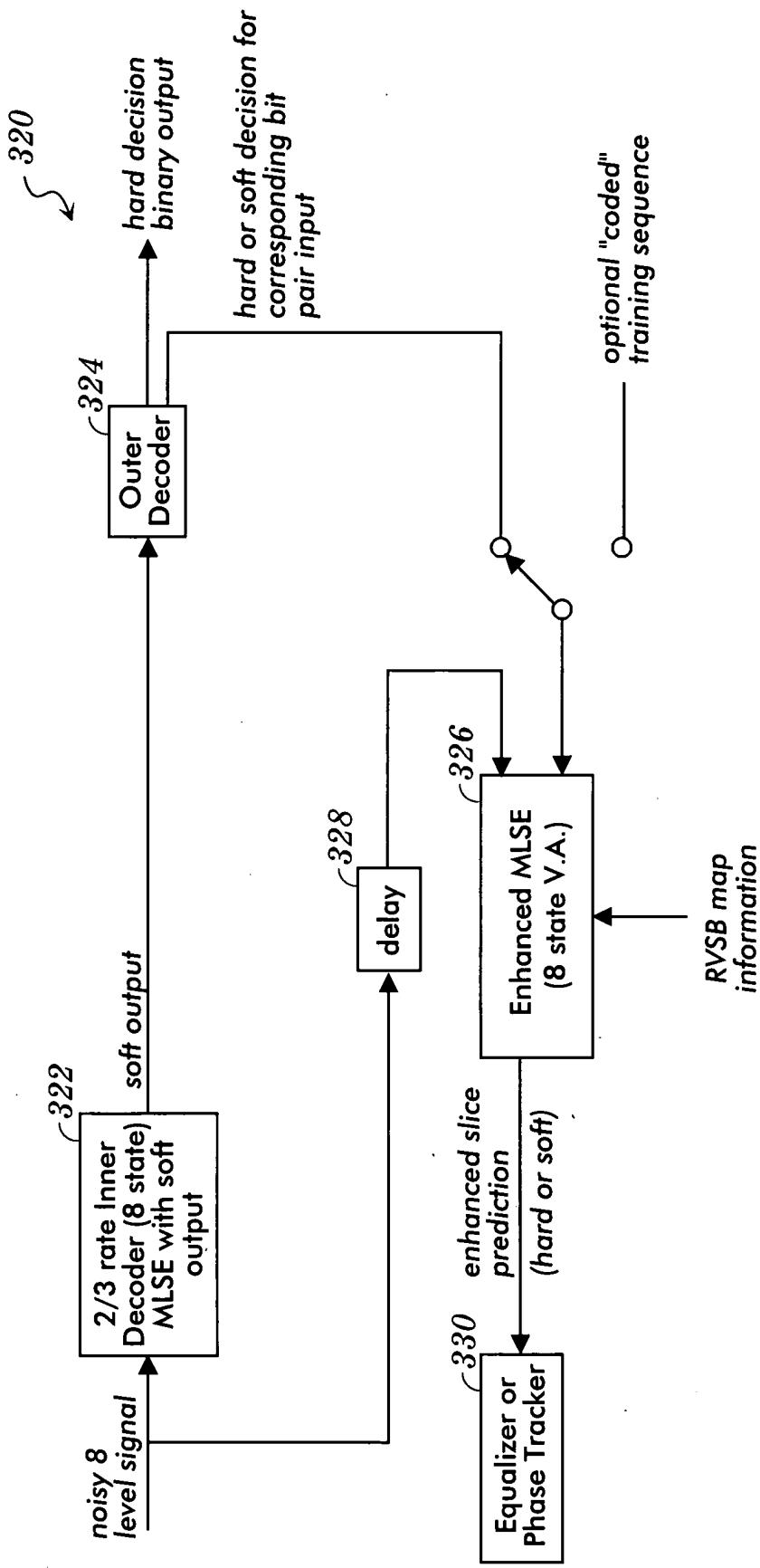


Figure 22